

#### ABSTRACT OF THE DISCLOSURE

A process to produce N-vinylformamide includes the steps of: reacting hydroxyethyl formamide with a reactant comprising at least one cyclic anhydride group to form an ester, and dissociating the ester via heat in a thin film evaporation to synthesize N-vinylformamide and a compound comprising at least one diacid group, the N-vinylformamide separating from the diacid during the thin film evaporation. The reactant including at least one cyclic anhydride group can, for example, be succinic anhydride, maleic anhydride, phthalic anhydride, (2-docecen-1-yl)succinic anhydride, *exo*-3,6-epoxy-1,2,3,6-tetrahydrophthalic anhydride or a polymer including at least one cyclic anhydride group. A process to produce N-vinylformamide comprises the steps of: mixing acetaldehyde, formamide and a source of anhydride in a single reaction vessel, reacting the acetaldehyde, formamide and the source of anhydride in the reaction vessel under pressure, dissociating an ester formed by a reaction between the source of anhydride and hydroxyethyl formamide formed in the reaction vessel to synthesize N-vinylformamide and a compound comprising at least one diacid group.